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Document Details

Title:

OPERATION SUN BEAM SHOTS LITTLE FELLER I AND II, JOHNIE BOY, AND SMALL BOY
PROJECT OFFICER'S REPORT-PROJECT 2.3 NEUTRON FLUX MEASUREMENTS (6-14-
63) (DELETED)

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Subject Terms:

DOMINIC II OPERATION; LITTLE FELLER I EVENT; LITTLE FELLER II EVENT; JOHNNIE BOY EVENT; SMALL BOY EVENT; RADIATION DETECTORS; NEUTRONS

Document Location:

Location - DOE/NNSA NUCLEAR TESTING ARCHIVE Address - P.O. Box 98521 City - Las Vegas State - NV Zip - 89193-8521 Phone - (702)794-5106 Fax - (702)862-4240 Email - NTA@NV.DOE.GOV

Document Type:

REPORT

Publication Date:

1985 Sep 01

Declassification Status:

Sanitized

Document Pages:

0081

Accession Number:

NV0051096

Document Number(s):

POR2264EX

OpenNet Entry Date:

1994 Aug 26

OpenNet Modified Date:

2003 Sep 18

Description/Abstract:

THE OBJECTIVES OF THIS PROJECT WERE (1) TO MEASURE FREE-FIELD NEUTRON FLUX AND SPECTRUM AS REQUIRED IN SUPPORT OF OTHER PROJECTS; (2) TO DOCUMENT THE NEUTRON FLUX VERSUS GROUND RANGE; AND (3) TO DETERMINE THE EFFECT OF VARIOUS BLAST CONTAINERS AND SHIELDS ON DETECTOR ACTIVATION. A TOTAL OF APPROXIMATELY 900 NEUTRON-FLUX MEASUREMENTS WERE MADE WITH THE FOLLOWING DETECTOR MATERIALS: GOLD, URANIUM-235, PLUTONIUM, NEPTUNIUM, URANIUM-238, SULFUR, MAGNESIUM, ALUMINUM, AND ZIRCONIUM. THE FOLLOWING CONCLUSIONS WERE REACHED: THE NEUTRON SPECTRUM FROM ALL FOUR SHOTS, WITH THE EXCEPTION OF THE THERMAL NEUTRONS, DID NOT CHANGE WITH INCREASING DISTANCE FROM GROUND ZERO AFTER THE FIRST 100 YARDS. THE THERMAL NEUTRON FLUX AT 150 FEET FROM GROUND ZERO WAS HIGHEST CLOSER TO THE GROUND FOR SHOT LITTLE FELLER II. THE THERMAL NEUTRON FLUX AT 150 FEET FROM GROUND ZERO INCREASED SLIGHTLY WITH INCREASING HEIGHT ABOVE THE GROUND (TO A HEIGHT OF 20 FEET) FOR S THERE

WAS NO REDUCTION IN THE GOD-NEUTRON-DECTOR ACTIVATION DUE TO THE BLAST SHIELD. THE NEUTRON DOSE FROM SHOTS LITTLE FELLER I AND II ON A PER TON BASIS AGREED VERY WELL WITH THAT MEASURED AT SHOT FIG, OPERATI ON HARDTACK. THE NEUTRON DOSE MEASURED FOR SHOT SMALL BOY WAS IN EXCEL LENT AGREEMENT WITH THE PREDICTION FROM TM 23-200 AT 900 FEET AND INCR EASED HIGHER THAN TM 23-200 AT 1800 FEET; HOWEVER, THIS WAS STILL WITH IN THE STATED DEGREE OF RELIABILITY. EXCELLENT AGREEMENT (WITHIN 20 PE RCENT) WAS ATTAINED BETWEEN THE MEASURED NEUTRON DOSE FROM SHOT SMALL BOY AND AN EMPIRICAL PREDICTION METHOD DERIVED BY THE ARMOUR RESEARCH FOUNDATION. HOWEVER, CERTAIN PARAMETERS, NECESSARY TO EVALUATE THIS PR EDICTION, WERE OBTAINED FROM SHOT OSAGE, A DEVICE OF SIMILARY YIELD DE TONATED AT OPERATION REDWIG; THIS INFORMATION WAS NOT AVAILABLE FOR SH OT SMALL BOY AT THE TIME THIS REPORT WAS WRITTEN. THUS, THE AGREEMENT

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